

## ABSTRACT

A compound semiconductor device includes hexagonal silicon carbide crystal substrate and a boron-phosphide-based semiconductor layer formed on the silicon carbide crystal substrate, wherein the silicon carbide crystal substrate has a surface assuming a  $\{0001\}$  crystal plane, and the boron-phosphide-based semiconductor layer is composed of a  $\{111\}$  crystal stacked on and in parallel with the  $\{0001\}$  crystal plane of the silicon carbide crystal substrate, and when the number of the layers contained in one periodical unit of an atomic arrangement in the  $[0001]$  crystal orientation of the silicon carbide crystal substrate is  $n$ , an  $n$ -layer-stacked structure included in the  $\{111\}$  crystal plane forming the  $\{111\}$  crystal has a stacking height virtually equal to the  $c$ -axis lattice constant of the silicon carbide crystal substrate.